Can I Make My Cows More Efficient Through Modified Water Sources?

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One of the main goals of most ranchers is to maximize the return of their livestock enterprise while sustaining the resources used by their livestock enterprise. Maximizing the return of an enterprise without regard for the sustainability of the resources will result in eventual economic and environmental disaster. One can assume that ranchers who have been economically sustainable over generations must have learned how to work with the environment rather than against it. I certainly feel that assumption is true. In general, the forage resources used on livestock operations today are in better environmentally sound condition than anytime this century. What about the available sources or quality of the water supplied to livestock?

WATER DISTRIBUTION

Water distribution is better than at any other time this century. Ranchers continue to improve the distribution of water through providing additional water sources where it has not been available before. Reservoirs, dugouts, and pipelines have all increased in numbers over the last half-century thereby improving the distribution of livestock and wildlife. This has allowed ranchers to utilize forage resources that were not used in the past because of their distance from water. Many ranges in Montana can still benefit from more livestock drinking water sources. Programs are available through USDA and even private wildlife organizations to assist ranchers with water distribution.

WATER QUALITY

What about water quality for livestock? Drinking water quality parameters have not been documented like those for human consumption and most Montana water sources have not been quantified as to quality. According to the 305b Montana Water Quality 1994 Report, 90% of the stream miles or 159,070 miles have not been assessed. Ninety-four percent of the lake acres have been assessed, however, that only represents approximately two percent of all the lakes, 183 of 10,246 lakes 5 acres and larger, in Montana. Unless there has been a specific health problem, most private reservoirs' water quality have not been evaluated. In my opinion, there is certainly no need to do a costly water quality test on most private reservoirs unless there is a suspected problem. Cattle

behavior and performance is a simpler way of telling if something is wrong with the water or forage quality.

In order for livestock to perform up to their genetic potential, they must have adequate feed and water. Quality of the feed and water play an important role in how well the livestock perform. Livestock will select the best quality of feed and water when given a choice. This is why ranchers take extra effort to put up high quality forages. It makes just as much sense to make the highest or best quality of water also available. Ideal drinking water temperature for livestock is between 40 and 65 degrees F. Steers having access to cool drinking water gained .3 to .4 pounds more per day than those drinking warm water (Boyles, S. & et al).

The dairy farmer makes free access to water a high priority, because cows that can drink all the water they want will produce more milk and more butterfat than cows only allowed to drink twice a day. Dry cows require about 8 to 10 gallons of water daily. Daily water consumption by cows in their last 3 months of pregnancy may rise to 15 gallons. Those in milk need about five times as much water as the volume of milk they produce. Calves start drinking water at an early age and their performance can be highly dependent on the availability of water and consumption is dependent on access and quality of the water.

CAN WATER SOURCE AFFECT QUALITY?

A large number of cattle in Montana depend on earthen water basins, such as, reservoirs, ponds or dugouts for their drinking water. Cattle depending on the one of these sources of drinking water may have an affect on the quality of that water simply by the type of access they have to it. Cows that drink out of reservoirs or dugouts churn up the sediments as they move into the water to get a drink. Many times the second cow to drink will travel farther out, if possible, to get a cleaner drink of water. The majority of sediment-bound fecal organisms remain on the bottom of a reservoir until disturbed. A typical disturbance would be livestock or wildlife walking in the reservoir. However, when drinking from a tank, the sediments are not resuspended each time a cow comes to drink. Cattle drinking from a tank rarely deposit urine and manure in the tank compared to those drinking in the reservoir, which will usually make a deposit before leaving the water source.

The real question is will cattle drink out of a tank if other water sources are available? Research in Oregon (Miner, J.R, & et al) demonstrated, under winter feeding conditions, cattle preferred to drink out of a tank rather than a stream. During this study cattle were monitored as to how much time they spent in and around the stream. Cattle had full access to the stream in both pastures, while only one also included a water source out of a tank. Access to the stream was

not fenced off. Time in the stream was reduced by 90 percent over cattle that only had the stream as a water source.

To me this says cattle, when given a choice, prefer not to wade in the mud or risk slipping on ice to get a drink of water. Does this have any application to summer grazing? I believe so. Personal observations on several demonstration projects indicate cattle will preferentially drink out of a tank and spend less time at the reservoir when given a choice. The water source of these demonstration projects is from an unfenced nearby reservoir. It is the same water gravity flowed or pumped from the near by reservoir to the tank. The cattle have a choice of wading into the reservoir or drinking out of a tank. Cattle drinking out of the tank do not have to consume as high a level of Total Suspended Solids (TDS). This in part maybe the reason the cattle appear to prefer the tank to the reservoir.

Supplying water to cattle by adding a tank and some pipe and maybe even a pump (solar, wind or other power source) just because the cows like it is not enough when cattle prices are having trouble keeping up with operational expenses. Is there an economic benefit in order to pursue this additional expense?

The jury is still out, but there is some evidence that cattle performance may be enhanced by providing a higher quality of drinking water. Research in Alberta (Willms, W. D., & et al) showed a 23% increase in weight gains over a 71 day period for yearling steers whose drinking water source was from well water versus those whose source was from a dugout. Studies in 1993 showed a 20% difference in animal weights, when exposed to different water sources for a 30-day period. Some of the sources of water were pumped out of dugouts to tanks compared to cattle drinking directly out of a dugout. A 1994 study confirmed the impact on cows, with a lesser impact on calves (Kenzie, O.).

If, in fact, a significant weight gain or cow/calf efficiency can be improved, then it would be worth dollars to producers to put in tanks for an out of reservoir drinking water source. For example, if one could realize a 5% increase in calf weights, 100 calves would pay for one gravity system, approximately $13-1400.00, in one year at today's calf prices.

500 lb. calf * .05 = 25lbs.

25lbs * $0.60/lb = $15.00

$15.00 * 100 calves = $1500.00

Herd health may also benefit from providing access to water other than in the reservoir thereby minimizing disease transmission. Putting a dollar value to this is more difficult, but in fact may be part of the increase in cow performance.

A rancher who is planning on reconstructing dams or building new water sources may want to consider putting in a siphon tube to a tank away from the edge of the reservoir.

REFERENCES:

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